

ABSTRACT OF THE DISCLOSURE

In accordance with an aspect of the invention, a method of forming a trench isolation region includes forming a trench within a substrate. A silanol layer is formed to partially fill the trench and then converted, at least some of the silanol, to a compound including at least one of SiO_n and RSiO_n , where R includes an organic group. An electrically insulative material is formed over the converted silanol to fill the trench. In another aspect of the invention, a method of forming a trench isolation region includes forming a trench within a substrate. A first layer of at least one of Si(OH)_x and $(\text{CH}_3)_y\text{Si(OH)}_{4-y}$ is formed to partially fill the trench. At least some of the Si(OH)_x if present is converted to SiO_2 and at least some of $(\text{CH}_3)_y\text{Si(OH)}_{4-y}$ if present is converted to $(\text{CH}_3)_x\text{SiO}_{2-x}$. Next, a layer of an electrically insulative material is formed to fill the trench.